Amendments to the Claims

Listing of Claims

This Listing of the Claims will replace all prior versions and listings of claims in this application.

Claims 1-16. (Cancelled)

17. (New) A MOSFET transistor structure formed in a substrate of semiconductor material having a first conductivity type; the MOSFET transistor structure consisting of:

a single rectangular active region formed the substrate, the single rectangular active region having a substantially rectangular perimeter;

perimeter isolation dielectric material formed in the substrate along the entire substantially rectangular perimeter of the single active region to define a continuous substantially rectangular interface between the isolation dielectric material and the single rectangular active region;

a single source region and a single drain region formed in the single rectangular active region to define a substrate channel region therebetween, both the single source region and the single drain region having a second conductivity type that is opposite the first conductivity type and also being spaced-apart to define a substantially rectangular substrate channel region therebetween, the substrate channel region having the first conductivity type; and

a conductive gate electrode that consists of a first portion that extends over the substantially rectangular substrate channel region and a second portion that extends continuously over the entire substantially rectangular interface between the isolation dielectric material and the single rectangular active region, the conductive gate electrode being separated from the substantially rectangular substrate channel region by intervening gate dielectric material, the conductive gate electrode having one opening formed therethrough over the source region and a second opening formed therethrough over the drain region.

18. (New) A MOSFET transistor structure as in claim 17, and wherein the perimeter isolation dielectric material comprises silicon dioxide.

19. (New) A MOSFET transistor structure as in claim 17, and wherein the conductive gate electrode comprises polysilicon.

20. (New) A MOSFET transistor structure as in claim 17, and wherein the gate dielectric material comprises silicon dioxide.

21. (New) A MOSFET transistor structure as in claim 17, and wherein the first conductivity type is P-type.

22. (New) A MOSFET transistor structure as in claim 17, and wherein both the single source region and the single drain region are spaced-apart from the substantially rectangular interface.

23. (New) A MOSFET transistor structure as in claim 22, and wherein both the single source region and the single drain region are spaced-apart from the substantially rectangular interface by about 1000-5000 Angstroms.

24. (New) A method of forming a MOSFET transistor structure in a substrate of semiconductor material having a first conductivity type, the method comprising:

forming isolation dielectric material in the substrate such that the isolation dielectric material defines a substantially rectangular active region of the substrate, the isolation dielectric material being formed along the entire perimeter of the active region to define a continuous substantially rectangular sidewall interface between the isolation dielectric material and the active region;

forming a layer of gate dielectric material that extends over the active region and over the continuous sidewall interface between the isolation dielectric material and the active region;

introducing dopant material into the active region to define one source region and one drain region that is space-apart from the source region, the source region and the drain region having a second conductivity type that is opposite the first conductivity type and defining a substrate channel region therebetween; and

forming a conductive gate electrode on the gate dielectric material, the conductive gate electrode consisting of a first portion that extends over the substrate channel region and a second portion that extends continuously over the entire sidewall interface between the isolation dielectric material and the active region, the conductive gate electrode being separated from the substrate channel region by intervening dielectric material, the conductive gate electrode further having a first opening formed therethrough over the source region and a second opening formed therethrough over the drain region.

25. (New) A method as in claim 24, and wherein both the source region and the drain region are formed to be space-apart from the sidewall interface.

26. (New) A method as in claim 25, and wherein both the source region and the drain region are formed to be spaced apart from the sidewall interface by about 1000-5000 Angstroms.